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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,122	07/12/2005	Jean-Michel Rouet	FR 030001	8397

24737 7590 06/10/2008
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
PAPPAS, PETER	

ART UNIT	PAPER NUMBER
2628	

MAIL DATE	DELIVERY MODE
06/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/542,122	ROUET ET AL.
	Examiner	Art Unit
	Peter-Anthony Pappas	2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 3-6, 8 and 9 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 5-10 of copending Application No. 11/569, 166, herein referred to as '166. Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claim 1 of the instant application is anticipated by claim 4 of application '166, which is consider to contain the respective limitations of claim 1 of application '166, in that claim 4 of application '166 contains all the limitations of claim 1 of the instant

application. Claim 1 of the instant application therefore is not patently distinct from claim 4 of application '166 and as such is unpatentable under obvious-type double patenting.

10/542, 122	11/569, 166
Claim 1: creating a deformable tubular mesh for fitting a 3D path comprising a set of unordered points defining a plurality of path segments, the mesh model comprising a plurality of mesh segments corresponding to the plurality of path segments; automatically adapting a mesh radius of each path segment based on a curvature of the corresponding path segments, a distance between the ordered points defining the corresponding path segment and a predefined input radius.	Claim 1: means for computing a treelike center path of the tubular treelike structure; means for dividing the treelike center path of the tubular treelike structure into segments formed of points; means for generating generic cylindrical meshes formed of cells, for individual segments of the treelike center path. Claim 4: wherein the means for generating generic cylinders comprise: generating means for creating a deformable tubular mesh model for fitting a 3-D path segment composed of a set of ordered points and automatically adapting the mesh radius based on the curvature of the 3-D path and sample distance of the path points and a predefined input radius.

4. Claims 3-6, 8 and 9 of the instant application is anticipated by claims 5-10, respectively, of application '166 in that claims 5-10 of application '166 contains all the limitations of claims 3-6, 8 and 9, respectively, of the instant application. Claims 3-6, 8 and 9 of the instant application therefore are not patently distinct from claims 5-10, respectively, of application '166 and as such is unpatentable under obvious-type double patenting.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 17 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter ("computer readable medium for storing a computer program executable to process") which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is noted that the specification discloses "A computer program product having pre-programmed instructions to carry out the method may also be implemented" (p. 14, lines 22-23). However, said language is not considered to read on a "computer readable medium for storing a computer program executable to process."

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 2, 11 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "substantially" (lines 4, 3 and 2, respectively) is a relative term which renders the claim indefinite. Said term is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of applying prior art it is noted: the language “which substantially comprises” (claim 2) is considered to read “which comprises”; the language “having substantially tubular parts” (claim 11) is considered to read “having tubular parts”; the language “a substantially tubular object” (claim 14) is considered to read “a tubular object.”

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1-3, 6,10, 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flórez-Valencia et al. (3D Graphical Models for Vascular-Stent Pose Simulation) in view of Hernández-Hoyos et al. (Computer-assisted Analysis of Three-Dimensional MR Angiograms) in view of Montagnat et al. (A Hybrid Framework for Surface Registration and Deformable Models) and further in view of Yim et al. (Vessel Surface Reconstruction With a Tubular Deformable Model).

11. In regard to claim 1 it is noted the respective claim language includes open-ended language (e.g., comprising) and therefore said claim is not considered limited to only the limitations disclosed.

Flórez-Valencia et al. teaches a method for creating a deformable tubular (cylindrical) mesh model for fitting a (centerline for a portion of a 3D vessel) 3D path (p. 2, ¶ 4; p. 3, ¶ 2; Figs. 2-4) comprising a set of (vertices) ordered points (p. 3, ¶ 2; p. 4, ¶ 3) defining a plurality of path segments, the mesh model comprising a plurality of mesh segments corresponding to the plurality of path segments ("The surface is bound to the centerline: each surface vertex v_j is associated with the 3 closest centerline vertices…" – p. 4, ¶ 3; Fig. 5). Flórez-Valencia et al. teaches automatically adapting a mesh radius of each path segment based on a curvature of the corresponding path segment (pp. 4-5, § 3.2; "When the model surface undergoes some deformation the centerline bends accordingly through an external force resulting from the surfaces forces…" – p. 4, ¶ 3, and p. 5, ¶ 1; "…r_k is the radius (means distance of the surface vertices to the centerline in a_k…" – p. 5, ¶ 3), a distance between the ordered points defining the corresponding path segment (distance between the respective vertices of said centerline) and a predetermined input radius (p. 3, ¶ 3; p. 5, ¶ 3; p. 6, ¶ 1; Figs. 2-4). It is noted that the respective claim language fails to disclose what exactly constitutes a predetermined input radius and thus a radius which is determined prior to some future use (e.g., calculation, display, etc.), such as taught by Flórez-Valencia et al., is considered to read on a predetermined input radius as said radius is determined prior to future use.

It is noted that method taught by Flórez-Valencia et al. is reliant upon teachings disclosed in papers [7: Hernández-Hoyos et al. – p. 425, col. 1, ¶ 3; p. 425, col. 2, ¶ 3; pp. 427-428, § How Does it Work; p. 434, § Conclusions; Figs. 7-9], [8: Montagnat et al. – pp. 1043-1044, § 3.1; pp. 1044-1046, § 5] and [16: Yim et al. – p. 1414, col. 1, ¶ 2; p. 1416, col. 1, ¶ 3; p. 1417, col. 1, ¶ 2; p. 1419, col. 2, ¶ 3; Fig. 4] which are directly referenced by Flórez-Valencia et al. (p. 2, ¶ 3, 4; p. 3, ¶ 5). Specifically, Yim et al. teaches that a second feature of the tubular coordinate system is that the radii do not emanate in straight lines from the axis at all points (path points). Rather, the radial lines are warped in areas where the vessel axis is curved (curvature of 3D path). This warping prevents radial lines from adjacent axial locations (distance between axial points) from intersecting one another (p. 1414, col. 1, ¶ 2; p. 1417, col. 1, ¶ 2; Fig. 4).

It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the respective teachings of said papers into the method taught by Flórez-Valencia et al., because Flórez-Valencia et al. explicitly states the use of said teachings to implement the method taught by Flórez-Valencia et al. and thus through such incorporation it would provide a means of rendering said method operable.

12. In regard to claim 2 Flórez-Valencia et al. teaches creating a tubular structure for fitting the 3D path which substantially comprises a centerline of the 3D tubular object of interest (p. 3, ¶ 5) and mapping the 3D deformable tubular structure onto a 3D surface of the tubular object of interest (p. 3, ¶ 3; p. 6, ¶ 1). However, Flórez-Valencia et al. fails to explicitly teach wherein the object of interest is represented in a gray level 3D image. It is implicitly taught by Flórez-Valencia et al. that color is used because both a given

object of interest and a mesh are made visually apparent and are not invisible (Figs. 3, 4).

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to color the object of interest in gray because Applicant has not disclosed that coloring the object of interest in gray provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the color used by Flórez-Valencia et al. or the claimed gray coloring because both colors perform the same function of visually identifying for a given user a given region for further processing. Therefore, it would have been an obvious matter of design choice to modify Flórez-Valencia et al. to obtain the invention as specified in claim 2.

13. In regard to claim 3 Flórez-Valencia et al. teaches computing a 3D path that corresponds to a centerline of a tubular object of interest and defining the path segments on the 3D path (p. 2, ¶ 4; Fig. 2). Flórez-Valencia et al. teaches an example in which the length, along the longitudinal axis, of an initial straight deformable cylindrical mesh model is equal to the (centerline for a portion of a 3D vessel for the application of a stent) 3D path (p. 3, ¶ 2). Flórez-Valencia et al. teaches dividing the initial mesh into segments of length (e.g., Fig. 4, left) corresponding to (corresponding to locations of) the path segments of the 3D path (Fig. 3; Fig. 4, middle and right). It is noted the respective claim language is silent as to how said correspondence is defined. Flórez-Valencia et al. teaches computing, for each mesh segment of the initial mesh

model, a rigid-body transformation ("…one expects cylindrical structures with a high bending capability but for which deformations should preserve the generalized cylinder shape…" – p. 4, ¶ 2) that transforms an initial direction of the mesh segment into a direction of the corresponding path segment of the 3D path, and applying this transformation to the corresponding vertices of the mesh segment (p. 3, ¶ 3; pp. 4-5, § 3.2; p. 6, ¶ 1; Fig. 5). The rationale disclosed in the rejection of claim 1 is incorporated herein (Montagnat et al. – pp. 1043-1044, § 3.1; pp. 1044-1046, § 5).

14. In regard to claim 6 the rationale disclosed in the rejection of claim 1 is incorporated herein, specifically: Yim et al. – p. 1414, col. 1, ¶ 2; p. 1417, col. 1, ¶ 2; Fig. 4. It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the respective teachings of said papers into the method taught by Flórez-Valencia et al., because Flórez-Valencia et al. explicitly states the use of said teachings to implement the method taught by Flórez-Valencia et al. and thus through such incorporation it would provide a means of rendering said method operable. In addition, by warping radial lines self-intersection could be avoided (p. 1414, col. 1, ¶ 2) resulting in a more continuous model.

15. In regard to claim 10 it is implicitly taught that said method is implemented via a system, wherein said system includes a processor (e.g., circuit means) for executing respective computer instructions to perform said method. The rationale disclosed in the rejection of claim 1 is incorporated herein.

16. In regard to claim 11 it is noted an artery is considered to read on an organ (Flórez-Valencia et al. – p. 2, ¶ 2; Fig. 1). The rationale disclosed in the rejection of claim 10 is incorporated herein.

17. In regard to claim 17 the rationale disclosed in the rejection of claim 10 is incorporated herein. It is implicitly taught that said system comprises a computer readable medium for storing a computer program to instruct said processor as said method would be unable to be implemented without instructions controlling said processor and for said instruction to exist they must be stored in some form of memory.

18. Claims 4, 5, 7-9, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flórez-Valencia et al. (3D Graphical Models for Vascular-Stent Pose Simulation), Hernández-Hoyos et al. (Computer-assisted Analysis of Three-Dimensional MR Angiograms), Montagnat et al. (A Hybrid Framework for Surface Registration and Deformable Models) and Yim et al. (Vessel Surface Reconstruction With a Tubular Deformable Model)., as applied to claims 1-3, 6,10, 11 and 17, in view of Williams et al. (Rational Discrete Generalized Cylinders and their Application to Shape Recovery in Medical Images).

19. In regard to claim 4 Flórez-Valencia et al. fails to teach blending (linearly interpolating) the rigid-body transformations of consecutive mesh segments. Williams et al. teaches the use of interpolation between two consecutive segments (e.g., cross sections) in a rational discrete generalized cylinder (pp. 389-390, § 4; p. 390, § 5.1, p. 391, § 6; Fig. 4). It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the teachings of Williams et al. into the method

taught by Flórez-Valencia et al., because through such incorporation it would provide a means of minimizing distortion (e.g., twist) of said cylinder resulting in a more continuous model.

20. In regard to claim 5 Flórez-Valencia et al. fails to teach wherein a linear interpolation is used between rotations of consecutive mesh segments (family of rotations) for blending the 3D rigid body transformation to limit self-intersection between bent (e.g., twisted) portions of the deformable tubular mesh model. Williams et al. teaches wherein a linear interpolation is used between a family of rotations to limit self-intersection between twisted portions of the deformable tubular mesh model (pp. 390-391, § 5.2; p. 391, § 6; Fig. 4). The rationale disclosed in the rejection of claim 4 is incorporated herein.

21. In regard to claim 7 Flórez-Valencia et al. implicitly teaches wherein said method involves approximation, specifically approximation of local curvature, as said method is directed towards a simulation and a simulation is not considered able to flawlessly mirror reality (e.g., a simulation, no matter how good, can only account for so much). However, Flórez-Valencia et al. fails to teach applying a radius modulation technique via linear blending (linear interpolation) from one radius (segment) to another. Williams et al. teaches the use of interpolation between two consecutive segments (e.g., cross sections) in a rational discrete generalized cylinder (pp. 389-390, § 4; p. 390, § 5.1, p. 391, § 6; Fig. 4). It is noted that each section of said cylinder defined by a respective radius is considered to read on a segment. It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the teachings of Williams

et al. into the method taught by Flórez-Valencia et al., because through such incorporation it would provide a means of minimizing distortion (e.g., twist) of said cylinder resulting in a more continuous model.

22. In regard to claim 8 Flórez-Valencia et al. teaches that "...one expects cylindrical structures with a high bending capability but for which deformations should preserve the generalized cylinder shape..." (p. 4, ¶ 2). However, Flórez-Valencia et al. fails to explicitly teach computing a minimal 3D rotation from an initial mesh direction to a target segment. Williams et al. teaches computing the minimal 3D rotation from the initial mesh direction to a target segment (pp. 389-390, § 4; p. 390, § 5.1, 5.2, p. 391, § 6; Fig. 4). It is noted that computing the minimal 3D rotation from an initial mesh direction to a target segment is considered to read on minimizing mesh torsion. It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the teachings of Williams et al. into the method taught by Flórez-Valencia et al., because through such incorporation it would provide a means of minimizing distortion (e.g., twist) of said cylinder resulting in a more continuous model.

23. In regard to claim 9 Flórez-Valencia et al. fails to explicitly teach: defining rotations between segments using an axis parameter and a rotation angle parameter; computing the parameters iteratively between adjacent segments so that a new rotation for a current segment comprises a composition of a found rotation for a previous segment and the minimal rotation from the previous segment to the current segment. The rationale disclosed in the rejection of claim 8 is incorporated herein, specifically: Williams et al. – pp. 389-390, § 4; p. 390, § 5.1, 5.2, p. 391, § 6; Fig. 4. It is noted that

the iterative processing of a family of rotations, as disclosed by Williams et al., implicitly teaches that a rotation performed after a previous rotation in said family of rotations will be, at least to some degree, dependent upon the previous rotation.

24. In regard to claim 14 the rationale disclosed in the rejection of claims 1, 3 and 5 are incorporated herein.

25. In regard to claim 15 the rationale disclosed in the rejection of claim 7 is incorporated herein.

26. In regard to claim 16 the rationale disclosed in the rejection of claim 6 is incorporated herein.

Response to Arguments

27. The prior 35 U.S.C. 101 rejection has been withdrawn in light of the cancellation of claim 12.

28. In response to Applicant's remarks that the cited prior art of record fails to teach or suggest the respective claim limitations the Applicant is directed to the respective rejections above which have been clarified. It is noted that the respective cited teachings of Hernández-Hoyos, Montagnat et al. and Yim et al. are incorporated by reference by Flórez-Valencia et al. (p. 2, ¶ 3, 4; p. 3, ¶ 5). Thus, Flórez-Valencia et al. is considered to disclose the respective teachings of Hernández-Hoyos, Montagnat et al. and Yim et al.

In response to Applicant's remarks that the cited prior art of record fails to teach "...automatically adapting a mesh radius of each path segment based on a curvature of

the corresponding path segment, a distance between the ordered points defining the corresponding path segment, and a predefined input radius" it is noted:

Flórez-Valencia et al. teaches automatically adapting a mesh radius of each path segment based on a curvature of the corresponding path segment (pp. 4-5, § 3.2; “When the model surface undergoes some deformation the centerline bends accordingly through an external force resulting from the surfaces forces…” – p. 4, ¶ 3, and p. 5, ¶ 1; “…r_k is the radius (means distance of the surface vertices to the centerline in a_k…” – p. 5, ¶ 3), a distance between the ordered points defining the corresponding path segment (distance between the respective vertices of said centerline) and a predetermined input radius (p. 3, ¶ 3; p. 5, ¶ 3; p. 6, ¶ 1; Figs. 2-4). It is noted that the respective claim language fails to disclose what exactly constitutes a predetermined input radius and thus a radius which is determined prior to some future use (e.g., calculation, display, etc.), such as taught by Flórez-Valencia et al., is considered to read on a predetermined input radius as said radius is determined prior to future use.

Yim et al. teaches that a second feature of the tubular coordinate system is that the radii do not emanate in straight lines from the axis at all points (path points). Rather, the radial lines are warped in areas where the vessel axis is curved (curvature of 3D path). This warping prevents radial lines from adjacent axial locations (distance between axial points) from intersecting one another (p. 1414, col. 1, ¶ 2; p. 1417, col. 1, ¶ 2; Fig. 4).

29. Applicant's remarks have been fully considered but are not deemed persuasive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter-Anthony Pappas whose telephone number is (571)272-7646. The examiner can normally be reached on M-F 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Peter-Anthony Pappas
Examiner
Art Unit 2628

/Peter-Anthony Pappas/
Examiner, Art Unit 2628